

NEWFOUND LAKE

2019 SAMPLING HIGHLIGHTS

Station - Mayhew 2



Blue = Excellent =
Oligotrophic

Yellow = Fair =
Mesotrophic

Red = Poor = Eutrophic

Light Gray = No Data

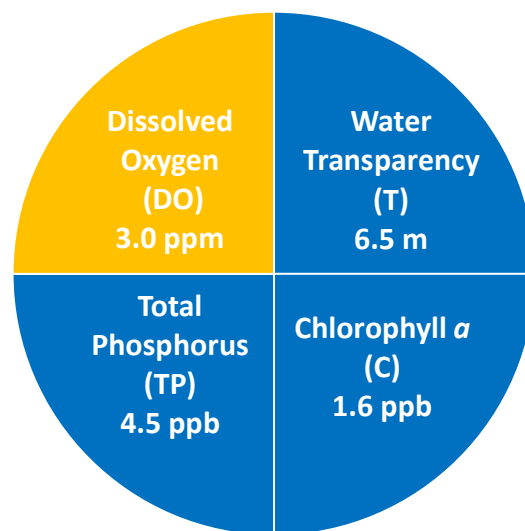


Figure 1. Station Mayhew 2 Water Quality (2019)

Table 1. 2019 Station Mayhew 2 Seasonal Averages and NH DES Aquatic Life Nutrient Criteria¹

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	Station Mayhew 2 Average (range)	Station Mayhew 2 Classification
Water Clarity (meters)	4.0 – 7.0	2.5 - 4.0	< 2.5	6.5 meters (range: 5.7 – 7.0)	Oligotrophic
Chlorophyll <i>a</i> ¹ (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	1.6 ppb (range: 1.0 – 2.7)	Oligotrophic
Total Phosphorus ¹ (ppb)	< 8.0	> 8.0 – 12.0	> 12.0 – 28.0	4.5 ppb (range: 3.7 – 5.1)	Oligotrophic
Dissolved Oxygen (ppm)	5.0 – 7.0	2.0 – 5.0	<2.0	3.0 ppm (range: 1.6 – 4.7)	Mesotrophic

* Dissolved oxygen concentrations measured on 8/15/19 between 10.5 and 17.3 meters in the bottom water layer.

Table 2. 2019 Station Mayhew 2 Seasonal Average Accessory Water Quality Measurements.

Parameter	Assessment Criteria					Station Mayhew 2 Average (range)	Station Mayhew 2 Classification
Color (color units)	< 10 uncolored	10 – 20 slightly colored	20 – 40 lightly tea colored	40 – 80 tea colored	> 80 highly colored	12.4 color units (range: 9.0 – 14.8)	Slightly colored
Alkalinity (ppm)	< 0.0 acidified	0.1 – 2.0 extremely vulnerable	2.1 – 10 moderately vulnerable	10.1 – 25.0 low vulnerability	> 25.0 not vulnerable	3.8 ppm (range: 3.7 – 3.9)	Moderately vulnerable
pH (std units)	< 5.5 suboptimal for successful growth and reproduction		6.5 – 9.0 optimal range for fish growth and reproduction			6.9 standard units (range: 6.9 – 7.0)	Optimal range for fish growth and reproduction
Specific Conductivity (uS/cm)	< 50 uS/cm Characteristic of minimally impacted NH lakes		50-100 uS/cm Lakes with some human influence	> 100 uS/cm Characteristic of lakes experiencing human disturbances		40.3 uS/cm (range: 39.4 – 41.1)	Characteristic of minimally impacted NH lakes

Recommendations for Property Owners:

Implement Best Management Practices within the Newfound Lake watershed to minimize the adverse impacts of polluted runoff and erosion into the lake. Refer to "Landscaping at the Water's Edge: An Ecological Approach" and "New Hampshire Homeowner's Guide to Stormwater Management: Do-It-Yourself Stormwater Solutions for Your Home" for more information on how to reduce nutrient loading caused by overland run-off.

- https://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf
- <http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-11.pdf>

LONG TERM WATER QUALITY

Site Mayhew 2 is located in the most southerly basin (Figure 4) that is characterized by dense first-tier lakeshore development. The condition of Site Mayhew 2 is a reflection of the nearby lakeshore development, as well as, the various inputs that enter the lake through the drainages to the north of Mayhew Island. Further review of water quality measurements at the other Newfound Lake sampling locations will provide a better assessment of more localized pollutant inputs that impact the other sampling locations (refer to the 2019 summary data contained in Table 3).

WATER CLARITY: The site Mayhew 2 water clarity data do not display a trend over the past thirty-four years of sampling (1986–2019).

CHLOROPHYLL: The site Mayhew 2 chlorophyll *a* data do not display a trend over the thirty-four years of sampling (1986–2019).

COLOR: The site Mayhew 2 color data display a trend of decreasing color concentrations over the thirty-three years of sampling (1987–2019).

TOTAL PHOSPHORUS: The site Mayhew 2 total phosphorus concentrations do not display a trend over the past thirty-one years of sampling (1987-2019).

In summary, site Mayhew 2 continues to show good water quality conditions. However, the Mayhew sampling location has consistently exhibited some of the shallower water transparency measurements collected among the Newfound Lake sampling locations. The Mayhew dissolved oxygen concentrations are also lower than those measured at the other Newfound Lake sampling locations. One should be aware that the total phosphorus data have not been collected on an annual basis and that data gaps exist among years (Figure 3).

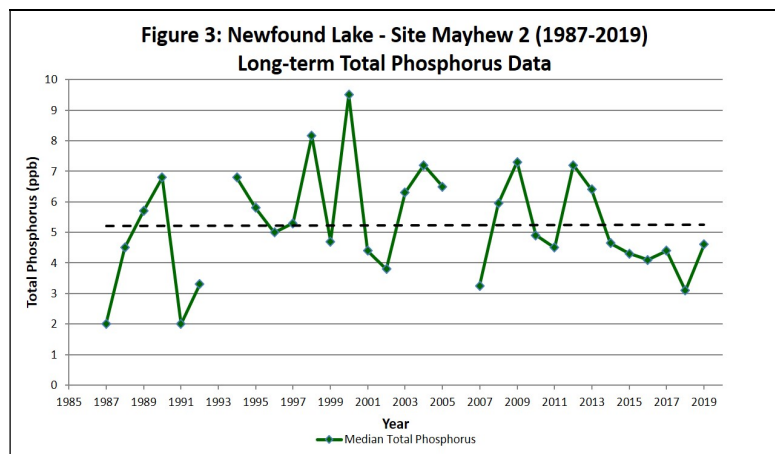
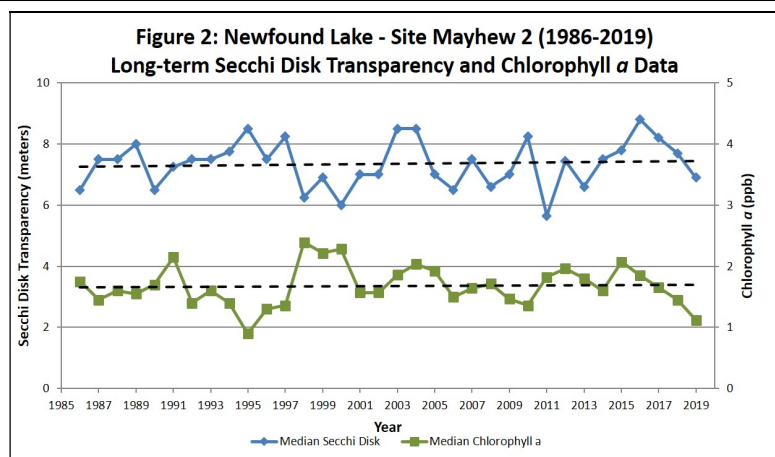


Table 3. Seasonal Average Water Quality by Sampling Location (2019)

Site	Average Secchi Disk Transparency (meters)	Average Chlorophyll <i>a</i> (ppb)	Average Total Phosphorus (ppb)	Average Dissolved Oxygen (ppm)
Deep 1	7.7	1.5	4.2	10.4
Mayhew 2	6.5	1.6	4.5	3.0
Pasquaney 3	7.7	1.8	3.8	9.9
Loon Island 4	7.0	1.6	4.9	XXXX
Cockermouth 5	6.9	1.9	4.2	9.3
Beechwood 6	6.8	2.1	4.2	10.0
Follansbee 8	7.9	1.3	3.7	10.0

XXXX indicates site is too shallow to collect comparable oxygen data.

Figures 2 and 3. Changes in the Newfound Lake water clarity (Secchi Disk depth), chlorophyll *a* and total phosphorus concentrations measured between 1986 and 2019 at site Mayhew 2. **These data indicate the relationship between plant growth and water clarity. Total phosphorus data are also displayed and are oftentimes correlated with the amount of plant growth.** Note: due to personnel limitations and budgetary constraints, there are years between 1986 and 2019 when incomplete data were collected at site Mayhew 2. Median trend graphs are developed using median annual values to minimize the impact of outlier data.

Figure 4. Newfound Lake

Bristol, Alexandria, Bridgewater & Hebron, NH

2019 Deep sampling sites with seasonal average water clarity

